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LICHENS: THEIR DESCRIPTION AND CLASSIFICATION.

A Monograph of the British Lichens. A Descriptive Catalogue of the Species in the Department of Botany, British Museum. By Annie Lorrain Smith. Part i. Second edition. Pp. xxiv+520+71 plates. (London: Printed by Order of the Trustees of the British Museum, 1918.) Price 30*s.*

THE need for a comprehensive descriptive work on British lichens has been increasingly evident during the last decade. This necessity was accentuated rather than satisfied when Miss Annie Lorrain Smith in 1911 supplied a second part to the "Monograph of British Lichens," the first part of which had been written by the Rev. James Crombie in 1894. During the intervening years so many advances had been made in our knowledge of lichens, and in the method of presenting such knowledge, that a revision of the first part of the monograph was absolutely essential. Crombie attached too little importance to the reproductive characters of the lichen, and consequently his system of classification was too artificial for present-day botanists. There had also been some reaction against the descriptive methods of his day, when lichenologists seemed to vie with each other in coining terms to express some infrequent phase of a lichen-organism.

In the second edition of part i. of the monograph an admirable attempt has been made to bring the work up to the standard of handbooks on other botanical groups, to classify the lichens in accordance with more modern views, to incorporate the discoveries of recent years, and to simplify the descriptions of the species. Another important improvement is the method of illustration. The sketchy figures given in the text of the first edition are replaced by seventy-one plates of drawings expressly prepared by Mr. P. Highley with his usual regard for both accuracy and beauty.

The introduction gives a short and simple account of the lichen-plant. Its chief fault lies in its brevity. The treatment is so excellent that an Oliver Twist attitude is engendered, and one wishes that a longer account had been given of such matters as the relationship between the algal and fungal constituents. This relationship is considered as symbiotic. Wallroth's and Elfving's views as to the parasitic nature of the fungus are not even considered worthy of mention. The symbiotic nature of the lichen-organism is generally accepted by lichenologists, and the fact that one symbiont (the fungus) occasionally preys on the other (the alga) is analogous to what has been shown by Keeble to occur in Convoluta.

The system of classification adopted is a wonderful advance on any system hitherto given in British works. Both symbionts are considered, the incomplete knowledge of phlogeny is requisitioned, and less attention is paid to the vegetative characters of the thallus.

The arrangement of the spores on basidia or in asci give the two sub-classes Basidiomycetes and Ascomycetes. Since all British lichens belong to the latter sub-class, it is the only one considered, and is divided into two series, Gymnocarpeæ with open apothecia, and Pyrenocarpeæ with perithecia. The Gymnocarpeæ are subdivided into three sub-series: (1) Coniocarpineæ with powdery apothecia or perithecia; (2) Cyclocarpineæ, having apothecia with open discs and fungal ancestors belonging to the Discomycetes; and (3) Graphidineæ, having apothecia with narrow discs, their fungal ancestors being allied to the Hysteriaceæ. The sub-series Cyclocarpineæ, with which part i. is mainly concerned, is next split up into orders according to the algal symbiont, the presence or absence of a thalline margin to the apothecium, and the form of the thallus, the relative importance assigned to these characters being generally in this sequence.

It is unfortunate that the name of order is retained for groups which, in accordance with modern views, ought rather to be called families. The retention of order cannot be altogether justified by the fact that this name was used for similar groups in part ii.

Some of the families have somewhat incongruous components if the views of sporologists have sufficient importance attached to them. Physciaceæ (unintentionally given as Physiaceæ on p. 189) includes Xanthoria and Placodium with colourless polarilocular spores, as well as Physcia with dark spores which are more 1-septate than polarilocular. Xanthoria and its allies would have been better placed as a separate family. Lecanoraceæ includes Lecanora, having eight simple spores in the ascus, Acarospora with many simple spores in the ascus, and Lecania and other genera with septate spores.

Owing to the different system of classification a long appendix is necessary to bring the work into conformity with part ii. In this appendix the species of Cladoniaceæ and Gyrophoraceæ are described, the members of the Sarcogyne section of Lecanora are rightly placed as Biatorellas, whilst Dirina, Roccellæ, Pyrenidium, and a number of species new to the British Isles are described under their proper families.

There is a considerable amount of alteration of names, mostly well-warranted according to the rules of priority. It is unfortunate that some well-established names suffer, and one could wish that the author had followed a similar course as that adopted for *Lecanora campestris*, the generally accepted specific name being retained, whilst the doubtful, though prior, name of *punctatus* was rejected. Other authors have considered themselves justified in rejecting some of the combinations used by Miss Smith, on account of their inappropriate or doubtful nature. *Synechoblastus rupestris* displaces *Collema flaccidum*, though many authors have considered the specific name of *rupestre* as of too doubtful priority to take the

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place of the well-established *flaccidum*. In *Leptogium microphyllum* the well-known specific name is altered to *fragrans*, a name which has been rejected by many authors on account of its inappropriateness, *Lichen fragrans* being merely an accidental fragrant state. It is difficult to understand why *aeruginosa* (Chænotheca, p. 8) displaces *stemonea*, since in the accompanying list of synonyms the first date assigned to *aeruginosum* is 1813, whilst that for *stemoneum* is 1810. Naturally there are many alterations in the status of a plant according to the personal views of the author.

For the distribution and frequency of the species too close a dependence is placed on the specimens in the Museum, and too little regard is paid to independent investigations. Cumberland is given as "the only British locality" (a phrase of too common occurrence) for the frequent *Pertusaria wulfenii* var. *rugosa*. *Lecanora pallida* (*albella*) cannot be considered "rather rare," and *Placynthium nigrum* form *triseptatum* is not "rare." *Schizoma lichinodeum* occurs not only on Ben Lawers, "the only locality," but also on the neighbouring Killin hills; and *Synalissa intricata* is found in more than one locality.

The iodine reactions for the Collemas are not always rightly stated; both *C. pulposum* and *C. multifidum* give a negative reaction, and not a reddish one.

The figure on p. xv represents a biatoroid rather than a biatorine apothecium. The spores of *Acarospora squamulosa* on plate 52 are given as almost spherical and approximately 7 × 6 μ, whereas the text (p. 333) rightly gives them as 8–12 × 4–5 μ.

Considering the magnitude of the work, such discrepancies are few, and the author can have the satisfaction of knowing that it is the most useful work on British lichenology which has hitherto been published. W. W.

IMPERIAL TELEGRAPH FACILITIES AND THEIR ADMINISTRATION.

Telegraphy, Aeronautics, and War. By Charles Bright. Pp. xvii + 407. (London: Constable and Co., Ltd., 1918.) Price 16*s*. net.

THIS volume comprises seventeen addresses and articles on inter-Imperial communication given before the London Chamber of Commerce, the Royal Society of Arts, etc., and contributed to the *Quarterly Review*, *Nineteenth Century*, *Empire Review*, etc.; seven memoranda upon aeronautics by the author, presented to Government Departments; and two popular lectures on the war. These three subjects are correlated, and their treatment, as it were, is brought up to date, in an introduction of seventy-four pages, which constitutes a valuable adjunct to the collection.

The chapters are all of substantial and practical interest—the forcible expression of the views of a man who thinks with a view to action. Taken together, the predominating impression that they give is that Mr. Bright is no pacifist as regards either the war or any subject of which he treats. He is so combative that, in reading, one almost feels constrained to lift one's arm to ward off a blow! You want him to be on your side! Then all is well and forcibly put, and there is a great mass of interesting and valuable matter clearly expressed.

Mr. Bright has devoted a large part of his life to the subject of cable communication, and his chapters on that subject cover the whole range—apart from technical matters, which he has sought to exclude. The paper reprinted from the *Navy League Annual*, 1911–12, on "The Importance of Inter-Imperial Telegraphy," is a strong plea that in such matters our Government should think imperially. In similar strain he draws a moral from the Atlantic cable system, urging that the allowance of the handing over of the control of British-made and British-owned cables, even to the United States, was unpardonable on any terms. Mr. Bright's long and strenuous advocacy of "All-British" cable routes for strategic reasons has certainly been amply justified during the Great War.

While one could not agree without demur to the whole of Mr. Bright's presentment of the scheme for "Administration of Imperial Telegraphs" (as, for example, where he fails to realise that the difference in profit from the working of the telephone system by the late National Telephone Co. and by the Post Office is due almost entirely to the substantially improved scales of pay awarded to the operating staff), it must be admitted that he shows a masterly grip of the general situation, and his concluding words about ourselves and the Colonies—"surely it is desirable that we should think together, act together, and, if necessary, fight together, in a common cause"—seem now to have more substantial reality than they could have had in April, 1914, when they were spoken.

It is a little surprising to find so independent a thinker tending to accept the popular view of the Civil Service. The Service is a *profession*, and you can no more make it "commercial" than you can make the Bar "religious," or the City "scientific." Those who know best realise that the new Government Departments—administered and controlled by "business" men, and infused with "business" ideals—present all the worst characteristics of the Civil Service, and few of its merits. The only distinctive merit of the new departments is that ignorance has permitted them to "kick over the traces"; but the enlightenment of only three or four years has gone a long way to neutralise that merit. If they are to extricate themselves from their entanglements, it will be years before they can be demobilised.

The Civil Service, which contains a fairly satisfactory proportion of men who possess real business ability (capable of "running" something much bigger than a 'bus!), must be diagnosed on quite different lines if its ills are ever to be effectively treated. Mr. Bright, however, evidently does to a very appreciable extent understand that the

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